

WHAT IS CLAIMED IS:

1. A multi-initiator control unit for performing packet-unit communication with each of a plurality of devices connected via a transmission line, the multi-initiator  
5 control unit comprising:

a link core circuit for transmitting a packet to be transmitted to the transmission line, and also receiving a packet from the transmission line, performing error detection, and outputting the error-detected packet;

10 a packet filter for analyzing the packet received by the link core circuit and outputting the results;

a plurality of command control circuits each for controlling a command processing sequence performed with the corresponding device;

15 a multi-control circuit for giving sequence execution permission to one of the plurality of command control circuits;

a packet processing circuit for generating a packet containing information output by the permission-given command  
20 control circuit as the packet to be transmitted and outputting the packet to the link core circuit for transmission, and also outputting the packet received and output by the link core circuit according to the analysis results output by the packet filter; and

25 a CPU for executing a command contained in the packet

output by the packet processing circuit.

2. The multi-initiator control unit of Claim 1, wherein each of the plurality of command control circuits stores  
5 information output by the corresponding device, the information being required for a command processing sequence performed with the corresponding device, and outputs the information once the sequence execution permission is given to the command control circuit,

10 the multi-control circuit outputs information contained in the packet received and output by the link core circuit, the information being required for a command processing sequence performed with the sender device of the packet, to the command control circuit among the plurality of command  
15 control circuits corresponding to the sender device to be stored in the command control circuit, based on the output of the packet filter, and

the packet processing circuit generates a packet containing information output by the command control circuit  
20 provided with the sequence execution permission and outputs the packet, and also receives a packet output by the device corresponding to the command control circuit in response to the packet output by the packet processing circuit.

25 3. The multi-initiator control unit of Claim 1, wherein

each of the plurality of command control circuits stores information in a command fetch request packet transmitted from the corresponding device, and performs command fetch operation for the device once the sequence execution permission is given to the command control circuit by the multi-control circuit.

4. The multi-initiator control unit of Claim 3, wherein each of the plurality of command control circuits receives a command fetch request from the corresponding device even during execution of a data transfer processing sequence.

5. The multi-initiator control unit of Claim 1, wherein each of the plurality of command control circuits has a register for storing an address for performing a command processing sequence, and

an address of the register is obtained by performing address expansion on an address of the register of a reference command control circuit among the plurality of command control circuits by a predetermined value as a unit depending on the node number of the device corresponding to the command control circuit including the register in question.

6. The multi-initiator control unit of Claim 1, wherein

the multi-control circuit selects one of the plurality of devices in a predetermined order every time a command processing sequence is terminated and gives the sequence execution permission to the command control circuit among the plurality of command control circuit corresponding to the selected device.

7. The multi-initiator control unit of Claim 1, further comprising a transfer control circuit for controlling data transfer between the packet processing circuit and the outside of the multi-initiator control unit,

wherein the packet processing circuit retrieves data to be transferred from the packet output by the packet filter and outputs the data to the transfer control circuit, and also generates a packet containing data transferred to the transfer control circuit and outputs the packet to the link core circuit.

8. The multi-initiator control unit of Claim 1, wherein the CPU is allowed to give sequence execution permission to the plurality of command control circuits.

9. The multi-initiator control unit of Claim 1, wherein correspondence is established between the node number of each of the plurality of devices and the position of a bit in a

field for identification of the node number, so that each of the devices can be identified by the position of the bit in the field.

5        10. A multi-initiator control method for performing packet-unit communication with each of a plurality of devices connected via a transmission line, the method comprising the steps of:

10        determining whether or not receipt of a command fetch request from one of the plurality of devices is stored; and

      fetching a command from the device and executing the command when it is determined that receipt of a command fetch request is stored,

15        wherein one of the plurality of devices is selected in a predetermined order, this selection being repeated, and the step of determining and the step of fetching are performed for the selected device.